

Claims

- [c1] 1. A digital document browsing system comprising:
a layout engine, for determining the layout of a digital document based on
digital document display form historical data acquired previously;
a view generator, for generating, in accordance with said layout determined by
said layout engine, data relating to the display form of said digital document;
and
a user interface, for displaying said digital document on a display device based
on said data relating to said display form generated by said view generator.
- [c2] 2. The digital document browsing system according to claim 1, wherein said
layout engine employs said historical data when allocating a display area, for
said display form of said digital document, for each element constituting said
digital document.
- [c3] 3. The digital document browsing system according to claim 1, further
comprising:
a history database,
wherein after said digital document has been displayed, through said user
interface, by using a predetermined display form for a predetermined period of
time, and when said display form is updated by said user, data relating to said
display form that has been used is stored as historical data in said history
database, and
wherein said layout engine determines said layout of said digital document
based on said historical data obtained from said history database.
- [c4] 4. The digital document browsing system according to claim 1, further
comprising:
a summarization engine, for preparing summaries for the sentences in said
digital document based on said historical data acquired for said digital
document,
wherein said view generator arranges said summaries, prepared by said
summarization engine, in accordance with said layout determined by said layout
engine, and generates data for a display form.

- [c5] 5. The digital document browsing system according to claim 4, wherein, based on said historical data, said summarization engine determines which parameters are required for summarization, and prepares a summary for each of the predetermined sentence elements that constitute the sentences of said digital document.
- [c6] 6. A digital document browsing system comprising:
display form generator, for generating a display form wherein display areas to be allocated to elements constituting said digital document are altered in accordance with the importance levels of said elements, while the structure of a digital document is maintained; and
a display for displaying said digital document in said display form that is generated by said display form generator.
- [c7] 7. The digital document browsing system according to claim 6, wherein, in order to display an entire page of said digital document in a single display area, said display form generator allocates a small display area for an element having a low importance level, and a large display area for an element having a high importance level.
- [c8] 8. The digital document browsing system according to claim 6, wherein said display form generator arranges a display area near the center of said display form for an element having a high importance level, and arranges a display area nearer the side of said display form for an element having a low importance level.
- [c9] 9. A digital document browsing system comprising:
a summarization engine, for preparing summaries for sentences in a digital document based on historical data related to a display form previously used for said digital document;
a view generator, for inserting said summaries prepared by said summarization engine instead of the original contents of said digital document, and for generating data relating to the display form of said digital document; and
a user interface, for displaying said digital document on a display device based on said data, generated by said view generator, relating to said display form.

- [c10] 10. The digital document browsing system according to claim 9, wherein, based on said historical data, said summarization engine determines which parameters are required for summarization, and prepares said summary for each of the predetermined sentence elements constituting the sentences of said digital document.
- [c11] 11. The digital document browsing system according to claim 9, further comprising:
a history database,
wherein, after said digital document has been displayed, through said user interface, with a predetermined display form for a predetermined period of time, and when said user has updated said display form, data related to said display form that has been used is stored as historical data in said history database, and
wherein said summarization engine summarizes said sentences of said digital document based on said historical data obtained from said history database.
- [c12] 12. A browser for displaying a digital document on a display device comprising:
an input function for entering a digital document to be displayed; and
a display function, for displaying said digital document using a predetermined display form,
wherein said display function displays, instead of the original contents of said digital document, a summary that is prepared based on historical data related to a display form previously used for said digital document.
- [c13] 13. The browser according to claim 12, wherein, based on said historical data, said display function determines which parameters are required for summarization, and prepares said summary for each of the predetermined sentence elements constituting the sentences of said digital document.
- [c14] 14. The browser according to claim 12, wherein, based on said historical data, said display function displays said digital document using a display form wherein said summary is displayed in display areas arranged for the individual elements that constitute said digital document.

- [c15] 15. A browser for displaying a digital document on a display device comprising:
a display function, for displaying a digital document having a predetermined
display form; and
a display updating function, for updating said display form,
wherein according to a predetermined rule said display function, while
maintaining the structure of said digital document, alters display areas to be
allocated for elements constituting said digital document, and displays said
digital document in the resultant display areas.
- [c16] 16. The browser according to claim 15, wherein said display function displays
an image, which is an element constituting said digital document, using a size
that corresponds to the display area of a sentence portion in said digital
document that is relevant to said image.
- [c17] 17. The browser according to claim 15, wherein, in the display form of said
digital document to be displayed, initially, said display function enlarges a
display area for an element located at the head of said digital document, and
reduces display areas for succeeding elements; and reduces a summarization
rate for an element located at the head of said digital document and increases
said summarization rate for succeeding elements, and wherein, each time said
display updating function updates said display form upon receiving an update
request, said display function shifts rearward the range wherein a large display
area is set and said summarization rate is reduced for the sentence element.
- [c18] 18. The browser according to claim 15, wherein said display updating function
accepts an update request for a predetermined designated portion in said
digital document that is currently displayed, and in accordance with said update
request, enlarges a display area for an element in said designated portion, and
displays a sentence in said designated portion, instead of a sentence having a
low summarization rate.
- [c19] 19. A sentence summarization system comprising:
a summarization history database, in which historical data for the
summarization of sentences is stored; and
a summarization engine, for summarizing sentences based on said historical

data stored in said summarization history database.

- [c20] 20. The sentence summarization system according to claim 19, wherein, based on said historical data, said summarization engine determines which parameters are required for summarization, and prepares said summary for each of the predetermined sentence elements that constitute the sentences of said digital document.
- [c21] 21. A digital document display method for displaying a digital document on a display device comprising the steps of:
extracting the structure of said digital document;
replacing, for each of the elements of said structure, the original contents of said digital document with a summary that is prepared based on historical data related to a display form previously used for said digital document, and generating data related to a new display form; and
displaying said digital document on said display device based on said data related to said new display form, so that all of said digital document is displayed on one screen.
- [c22] 22. A digital document display method for displaying a digital document on a display device comprising the steps of:
extracting the structure of a digital document;
generating data, while maintaining said structure of said digital document, related to a display form wherein display areas to be allocated to elements that constitute said digital document are altered in accordance with the importance levels of said elements, so that all of said digital document is can be presented on one screen; and
displaying said digital document on a display device based on said data related to said display form.
- [c23] 23. A sentence summarization method comprising the steps of:
obtaining a target sentence to be summarized;
obtaining historical data related to a summary for said target sentence from a summarization history database in which historical data are stored that are related to a previous summarization of a predetermined sentence; and

determining which parameters are required for the preparation of said summary based on said historical data, and preparing said summary of said target sentence based on said parameters.

- [c24] 24. The sentence summarization method according to claim 23, wherein said step of preparing said summary includes a step of:
determining which parameters are required for summarization, and preparing said summary for each of the predetermined sentence elements that constitute the sentences of said digital document.
- [c25] 25. A program that permits a computer, which includes a display device as an output, to perform:
a process for extracting the structure of a digital document to be displayed;
a process for replacing, for each of the elements of said structure, the original contents of said digital document with a summary that is prepared based on historical data related to a display form previously used for said digital document, and generating data related to a new display form; and
a process for displaying said digital document on said display device based on said data related to said new display form.
- [c26] 26. A program that permits a computer, which includes a display device as an output to perform:
a process for extracting the structure of a digital document;
a process for generating data, while maintaining said structure of said digital document, related to a display form wherein display areas to be allocated to elements that constitute said digital document are altered in accordance with the importance levels of said elements, so that all of said digital document can be presented on one screen; and
a process for displaying said digital document on a display device based on said data related to said display form.
- [c27] 27. A program that permits a computer to perform:
a process for obtaining a target sentence to be summarized;
a process for obtaining historical data related to a summary for said target sentence from a summarization history database in which historical data are

stored that are related to a previous summarization of a predetermined sentence; and
a process for determining which parameters are required for the preparation of said summary based on said historical data, and preparing said summary of said target sentence based on said parameters.

- [c28] 28. A storage medium on which an output of a computer stores a computer-readable program that permits said computer to perform:
a process for extracting the structure of a digital document to be displayed;
a process for replacing, for each of the elements of said structure, the original contents of said digital document with a summary that is prepared based on historical data related to a display form previously used for said digital document, and generating data related to a new display form; and
a process for displaying said digital document on said display device based on said data related to said new display form.
- [c29] 29. A storage medium on which an output of a computer stores a computer-readable program that permits said computer to perform:
a process for extracting the structure of a digital document;
a process for generating data, while maintaining said structure of said digital document, related to a display form wherein display areas to be allocated to elements that constitute said digital document are altered in accordance with the importance levels of said elements, so that all of said digital document can be presented on one screen; and
a process for displaying said digital document on a display device based on said data related to said display form.
- [c30] 30. A storage medium on which an output of a computer stores a computer-readable program that permits said computer to perform:
a process for obtaining a target sentence to be summarized;
a process for obtaining historical data related to a summary for said target sentence from a summarization history database in which historical data are stored that are related to a previous summarization of a predetermined sentence; and

a process for determining which parameters are required for the preparation of said summary based on said historical data, and preparing said summary of said target sentence based on said parameters.